

# DRAFT

## REMOVAL ACTION WORK PLAN

### JORGENSEN FORGE EARLY ACTION AREA

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**July 2013**

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

Abbreviation	Definition
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## **1 INTRODUCTION**

This Removal Action Work Plan (RAWP) has been prepared on behalf of Earle M. Jorgensen Company (EMJ) and Jorgensen Forge Corporation (Jorgensen Forge; herein referred to collectively as the Owner) pursuant to the Administrative Settlement Agreement and Order on Consent for Removal Action Implementation (AOC; EPA Region 10 CERCLA Docket No. 10-2013-0032) and attached Statement of Work (SOW).

The SOW requires submission of a RAWP, following EPA approval of the Final Design and subsequent bid and selection of a General Contractor to complete the work. In accordance with the SOW, this RAWP describes the construction activities planned as part of the implementation, coordination, quality assurance, and quality control activities for the removal of contaminated sediments and associated bank soils in a portion of the Lower Duwamish Waterway (LDW) Superfund Site adjacent to the Jorgensen Forge facility (Facility) located in Tukwila, King County, Washington (Figure 1; Jorgensen Forge Early Action Area [EAA]).

### **1.1 Work Plan Scope and Organization**

This RAWP details the activities planned for in-water dredging, shoreline excavation, placement of backfill and armor materials, transport and off-site disposal of impacted sediments and soils, and associated construction and monitoring activities. The cleanup will be conducted as a non-time-critical removal action (NTCRA) in accordance with the U.S. Environmental Protection Agency's (EPA's) selected removal action alternative documented in the *Action Memorandum for a Non-Time-Critical Removal Action at the Jorgensen Forge Early Action Area of the Lower Duwamish Waterway Superfund Site in Seattle, Washington* (Action Memo; EPA 2011a) and detailed in the *Final Engineering Evaluation/Cost Analysis [EE/CA] – Jorgensen Forge Facility, 8531 East Marginal Way South, Seattle, Washington* (Anchor QEA 2011a).

The RAWP is organized into the following sections:

- Section 1 - Introduction
- Section 2 – Removal Action Description
- Section 3 – Project Team Formulation

- Section 4 – Contractor Work Plan
- Section 5 – Construction Quality Assurance/Quality Control
- Section 6 – Project Schedule
- Section 7 – References

## **1.2 Background**

EMJ entered into an AOC with EPA on July 10, 2003 (EPA Docket No. CERCLA-10-2003-0111), to investigate whether the Facility, which is currently owned and operated by Jorgensen Forge and formerly owned and operated by EMJ, is or has been a source of PCBs to the LDW. The analytical results of soil and sediment samples collected during the investigation detected concentrations of PCBs in sediment and soil on the shoreline bank in the LDW adjacent to the Facility. EPA determined that these concentrations present a risk to human health and the environment and met the criteria for conducting a NTCRA under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; EPA 2008a). EPA and EMJ entered into the First Amendment to the AOC in April 2008. This amendment required EMJ to prepare an EE/CA, BA, and CWA Section 404(b)(1) Evaluation for the completion of a NTCRA of sediments and associated shoreline bank soil in the Jorgensen Forge EAA removal action boundary (RAB) that contain concentrations of chemicals that exceed the Ecology Sediment Management Standards (SMS) Sediment Quality Standards (SQS). The RAB was approved by EPA in 2008 (EPA 2008b).

The Owner previously submitted a Draft EE/CA, Second Draft EE/CA, and Final EE/CA to EPA in March 2009 (Anchor QEA 2009), November 2010 (Anchor QEA 2010), and October 2011 (Anchor QEA 2011a), respectively. EPA provided conditional approval of the Final EE/CA with slight modifications in a letter dated September 29, 2011, and subsequently provided formal approval of the Final EE/CA and selected the removal action alternative (Alternative 4 in the Final EE/CA) in the Action Memo (EPA 2011a). The issuance of the Action Memo completed the requirements of the AOC (EPA Docket No. CERCLA-10-2003-0111). Design, construction and long-term operations, maintenance, and monitoring are being conducted under a new AOC (EPA Docket No. 10-2013-0032) entered into between EPA and EMJ.

This RAWP includes a description of the removal action that will be performed by Jorgensen Forge and Boeing under a Second Modification (date pending) to the AOC with the EPA Office of Emergency Response. This removal action will include removal of the inactive corrugated metal pipes (CMP) and underlying soils with PCBs that exist in the northwest corner of the Jorgensen Forge property (Figure 2). This work is scheduled to be conducted either prior to or concurrently with the removal action activities within the RAB. In either case, the removal action will be directly adjacent to the RAB shoreline reconfiguration so the designs for these removal action activities will be integrated.

This RAWP does not account for coordination with the cleanup that will be conducted in the EPA-identified EAA-5 at Terminal 117 directly across the LDW from the Facility (Figure 1) as it will be initiated following the scheduled completion of the removal action within the RAB.

### **1.3 Site Access and Coordination**

The Site is operated by Jorgensen Forge. Security requirements.....Access agreements....

The Boeing Company (Boeing) is conducting an interim corrective action under the Resource Conservation and Recovery Act (RCRA) adjacent to the Boeing Plant 2 Facility in the area immediately adjacent and downstream from the RAB (Figure 1). This corrective action area is termed the Duwamish Sediment Other Area (DSOA) and Southwest Bank Corrective Measure and is also identified as an EAA by EPA. EPA collectively defined the DSOA and the Jorgensen Forge EAA as EAA-4. Due to the adjacency of these EAAs, the First Amendment to the Investigation AOC (EPA 2008a) between EMJ and EPA incorporated a Memorandum of Understanding (MOU) executed by the Owner and Boeing. The MOU administratively requires the coordination and cooperation of all parties conducting cleanup within the adjoining Boeing DSOA and RAB. This RAWP identifies how the cleanup activities conducted by the various parties will be coordinated.

## **2 REMOVAL ACTION DESCRIPTION**

The following subsections provide an overview of the removal action, including a description of the EPA approved alternative, EPA directed removal action objectives (RAOs), and the performance standards established in the Basis of Design Report (BODR; Anchor QEA 2013).

### **2.1 Removal Action Description**

The EPA-approved removal action alternative (EPA 2011a) includes the vertical and horizontal removal of total PCB RvAL sediment and shoreline bank exceedances identified within the RAB. In accordance with EPA's direction, the RAB was developed by screening the available sediment and shoreline bank soils total PCB data against the total PCB RvAL. Based on the findings of the data screening and the site-specific conditions described in the Final EE/CA (Anchor QEA 2011a), the EPA-approved RAB was identified as the 1.6-acre area shown in Figure 3, and is bounded by the following:

- To the east by the top of shoreline bank (including the top of sheetpile and concrete panel walls) extending from the northern to southern Facility property boundaries, with two areas extending just beyond the top of bank, as discussed below
- To the south by the extension of the southern Facility property boundary from the top of the concrete panel wall to the eastern boundary of the federal navigation channel
- To the west by the eastern boundary of the federal navigation channel extending from the southern boundary to the Boeing DSOA in-water cleanup boundary identified in the MOU (EMJ et al. 2007) followed by the surveyed (during low tide on August 28, 2008) toe of riprap elevation north of the in-water cleanup boundary
  - Per EPA's letter (2008b), the western boundary includes an isolated 20-foot extension into the federal navigation channel centered on station SD-322-S
- To the north by two boundaries: 1) the Boeing DSOA in-water cleanup boundary on the southern end; and 2) the Facility northern property line on the northern end

The removal action includes shoreline bank excavation and placement of slope containment materials. This portion of the shoreline is degraded, containing elevated chemical concentrations above the SMS SQS criteria and total PCB RvAL exceedances; highly armored and over-steepened (approximately 1 to 1 horizontal to vertical slope [1H:1V slope]) banks;

and, contains derelict creosote-treated piles, remnant overhanging asphalt pads, and other types of debris. Existing derelict creosote-treated piles, overhanging asphalt structures, and debris will be removed from the bank prior to excavation and slope containment. Upon excavation to the target depths, inert debris identified along the new surface may be allowed to remain in place if doing so would not affect the function of the overlying slope containment. The removed materials will be transported and disposed at an off-site RCRA-permitted Subtitle D disposal facility.

Following completion of the shoreline bank excavation to the design grades, clean slope containment materials will be placed on the post-excavation surface. The slope containment will be composed of a 1.5-foot “filter” layer amended with granular activated carbon (GAC; consisting of sandy gravel to gravelly sand) overlain by a 2.5-foot “armor” layer (consisting of light loose riprap) further overlain by a 0.5-foot layer of habitat substrate (anticipated to consist of rounded or sub-rounded 2.5-inch minus gravel). The filter layer will act as a containment layer, the armor layer will function to protect the filter layer from erosion, and the habitat layer will provide a uniform habitat substrate within the intertidal areas that functions to fill the interstitial areas of the armor layer.

The removal action will be completed such that impacts to the existing sheetpile wall and concrete panel walls are minimized, as well as existing in use concrete foundations and structures within close proximity of the top of shoreline bank. This will include offsets during dredging to minimize undermining as well as damage from construction equipment.

Concurrent with completion of the shoreline bank excavation, Ecology recommended that Jorgensen Forge consider removal of additional soil from the top of shoreline bank proximate to borings SB-3 and SB-4 containing surface total PCB concentrations above the Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A soil cleanup levels for industrial properties (10 mg/kg total PCBs), as established in Section 745 of Chapter 173-340 of the WAC (Figure 4). The total PCB soil concentration at SB-3 is 17.8 mg/kg in the 0- to 2-foot interval and 6.8, 1.9, and 11.3 mg/kg in the 0- to 2-foot, 2- to 4-foot, and 4- to 6-foot intervals at SB-4. Observed total PCB concentrations in SB-1, SB-2, SB-5, SB-6, and SB-7 across the remainder of the top of shoreline bank were well below the MTCA Method A industrial land use cleanup level.

The removal action design shoreline bank excavation grades extend through soils in the direct vicinity of SB-3 and SB-4. The Contractor will also have mobile equipment working in the vicinity of these borings in order to perform the shoreline bank excavation. Jorgensen Forge is concerned these soil disturbances could lead to track-out of soils containing PCBs to nearby upland surfaces. Due to these concerns, Jorgensen Forge has agreed to conduct the additional removal as shown in Figure 4. The area of additional removal is beyond the proposed reconfigured top of bank described in the EPA-approved Final EE/CA and Action Memorandum (EPA 2011a) so this removal will not be administered under the EPA AOC. Rather, this additional soil removal will be completed by Jorgensen Forge as an Interim Action under Amended Ecology Agreed Order (No. DE 4127). An Interim Action Work Plan (Anchor QEA 2013) is currently being reviewed by Ecology. The soil removal will be performed concurrently with the EPA removal action shoreline bank reconfiguration activities (see Section 4).

## **2.2 Removal Action Objectives**

As described in Section 4.1 of the EE/CA, the removal action is being prepared prior to the Record of Decision (ROD) for the LDW Superfund Site; therefore, final RAOs and final removal action standards, including the vertical point of compliance, target media removal action levels, and sediment removal action boundaries, have not been determined. For the purpose of this RAWP, prepared prior to completion of the ROD, the following EPA directed (EPA 2010) RAOs were used to maintain consistency with the current removal action objectives required throughout the LDW Superfund Site:

1. Human Health – Seafood Consumption. Reduce human health risks associated with the consumption of resident LDW seafood by reducing sediment and surface water concentrations of chemicals of concern (COCs) to protective levels.
2. Human Health – Direct Contact. Reduce human health risks associated with exposure to COCs through direct contact with sediments and incidental sediment ingestion by reducing sediment concentrations of COCs to protective levels.
3. Ecological Health – Benthic. Reduce toxicity to benthic invertebrates by reducing sediment concentrations of COCs to comply with Ecology SMS SQS.

4. Ecological Health – Seafood Consumption. Reduce risks to crabs, fish, birds, and mammals from exposure to COCs by reducing concentrations of COCs in sediment and surface water to protective levels.
5. Groundwater and Sediment Protection. Reduce migration of contaminants in groundwater to sediments to reduce risk to human health and the environment.

To achieve these RAOs in the 0-to 1.5-foot vertical point of compliance, EPA directed the use of the SQS for total PCBs (12 milligrams per kilogram of normalized organic carbon [mg/kg-OC]) as the appropriate delineating criterion and the appropriate RvAL for sediment removal and/or shoreline containment in the RAB (EPA 2010a). The use of the total PCB SQS criterion as the RvAL for sediment removal and shoreline containment is consistent with the LDW Slip 4 EAA, Terminal 117 EAA, and Boeing Plant 2 DSOA EAA cleanups.

As identified in EPA's Action Memo (EPA 2011a), the EPA-selected removal action will meet the above RAOs with the exception of the RAO for human seafood consumption over the long term. The Action Memo states:

*“The RBCs [Risk Based Concentration] necessary to protect unlimited human seafood consumption are very stringent. The goal for the LDW as a whole is to get as close to them as practicable. Achieving them may be impossible as they are more stringent than background concentrations, including natural background as defined by MTCA. However, this sediment removal will remove all contaminant concentrations over its aerial extent and will replace them with clean fill material meeting the backfill levels for final actions. Upon completion therefore, these formerly contaminated sediments will meet all cleanup goals and levels until they are recontaminated, to however marginal degree, by surrounding LDW concentrations, and LDW sources generally. These later post-NTCRA levels will be addressed by the LDW Record of Decision in a manner consistent with the rest of the LDW since the Jorgensen Forge EAA will remain part of the LDW site after this NTCRA is completed. It is important to emphasize that protective levels of COCs, particularly PCBs, are well below background concentrations, so it will not be possible, based on everything we know at this time, over the long term, to completely eliminate any unacceptable risk from this pathway without limiting fish consumption to some degree”.*

## **2.3 Performance Standards**

To achieve the Jorgensen Forge EAA RAOs, performance standards were established in the Basis of Design Report (BODR; Anchor QEA 2013). These performance standards were used to guide the removal action design, construction, construction verification, and long-term monitoring activities.

### **2.3.1 In-water Dredging and Off-site Disposal**

The following in-water dredging and off-site disposal performance standards were established:

- Impacted sediment, defined as sediments containing total PCB concentrations greater than the PCB RvAL (12 mg/kg OC) shall be removed within the EPA-approved RAB.
- The work shall be completed consistent with best management practices (BMPs) in order to minimize dredge residuals, releases, and recontamination of adjacent areas outside the RAB.
- The work shall be completed consistent with BMPs and 401(c) Water Quality Memorandum requirements in order to minimize water quality impacts outside the compliance boundary.
- The dredged sediment shall be transported to a future identified off-site offloading facility anticipated to be located within the LDW Site and subsequently hauled and disposed at an approved landfill facility.

### **2.3.2 Backfill of Dredge Areas**

The following backfill performance standards in dredge areas were established:

- Areas dredged or excavated to remove sediments and soils exceeding the PCB RvAL shall be restored to roughly the pre-removal grade with backfill material. Some areas within and directly adjacent to the navigation channel and on the shoreline bank may be at lower elevations following backfilling than pre-removal grade.
- The gradation of the backfill material shall be such that the surface of the backfill material generally remains stable without significant erosion.
- Imported backfill material shall meet defined chemical and geotechnical goals.
- The work shall be completed consistent with BMPs in order to minimize adjacent slope instability and dredge residuals migration.

- The work shall be completed consistent with BMPs and the EPA-prepared 401(c) Water Quality Memorandum requirements in order to minimize water quality impacts outside the compliance boundary.

### **2.3.3 Shoreline Stabilization**

The following shoreline stabilization performance standards were established:

- The shoreline bank shall be regraded to a flatter slope to promote better long-term stability.
- The nearshore bank sediment, soil, pilings, concrete, and debris excavated from the designated shoreline shall be disposed of at an approved landfill facility.
- The excavated surface of the shoreline bank shall be contained and armored to resist erosion and instability. The surface armoring shall be designed to resist bed shear velocities induced by a 100-year flood flow, 100-year wind-induced waves, vessel-induced waves from typical passing vessels, and anticipated propeller wash from vessels that operate in the area. The armoring design also accounts for projected sea level rise in the Puget Sound area.
- The target total thickness of the shoreline bank containment shall be a minimum of 4 feet thick and will include 1.5 feet of filter material overlain by 2.5 feet of armor overlain by 0.5 feet of habitat material.
- Imported shoreline bank stabilization materials shall meet defined chemical and geotechnical goals.
- The work shall be completed consistent with BMPs in order to minimize slope instability during construction, in-water work based on tidal elevations during construction, and excavation residuals migration.
- The work shall be completed consistent with BMPs and 401(c) Water Quality Memorandum requirements in order to minimize water quality impacts outside the compliance boundary.

### **3 PROJECT TEAM FORMULATION**

The following subsections present the tentative formulation of the Project Team, including roles and responsibilities of the parties involved in the removal action activities. A preliminary Project Team Organization Chart is presented in Figure 5. The Project Team consists of agency personnel, construction management and oversight personnel (the owner, project engineer, and construction quality assurance officer), and construction contractor personnel (on-Site superintendent, quality control manager, health and safety manager, and subcontractors).

#### **3.1 Agency Personnel**

EPA is the regulatory authority and is the responsible agency for overseeing and authorizing the removal action activities described **herein**. In this capacity, EPA will review information described in the BODR, Construction Specifications and Drawings, and this RAWP for consistency with the Removal Action Objectives (RAO), the AOC, and ARARs. The EPA Project Coordinator, or a designee, will exercise project oversight for EPA, coordinate comments developed by EPA and other agencies, and communicate agency observations with the Owner and the Project Engineer. The EPA Project Coordinator shall notify the Owner if they identify any concerns regarding the implementation of the removal action. The Owner, or a designated representative, will propose to EPA and the EPA Project Coordinator response measures or recommendations, as appropriate. The EPA, as appropriate, will make final decisions to resolve such issues or problems that may change the removal action scope.

**Comment [JC1]:** Interim Action overseen by Ecology. Add appropriate text.

EPA will work cooperatively with other government agencies, and other federal agencies, as necessary. The other agencies will continue to review documents and participate in decision making related to the removal action, as necessary and facilitated by EPA. Other agencies will provide their comments to the EPA Project Coordinator for communication to the Owner.

#### **3.2 Construction Management and Oversight Personnel**

### **3.2.1 Owner**

The Owner is ultimately responsible for implementing the removal action in accordance with the AOC and SOW. The Owner, or a designated representative, will implement the RAWP, review Contractor work products, and be the point of contact with EPA.

### **3.2.2 Project Engineer**

The Project Engineer is responsible for two main tasks. First, the Project Engineer is responsible for preparing the design of the removal action such that successful implementation of the design will result in achieving the AOC and construction activity-specific objectives and requirements.

Additionally, the Project Engineer will provide consultation and observations during construction to assist with implementation of the removal action in conformance with the EPA-approved design documents. During implementation of the removal action, potentially noncompliant construction activities will be referred to the Project Engineer. The Project Engineer is responsible for determining whether the allegedly noncompliant construction is acceptable within the design, unacceptable, or acceptable with a design modification. EPA will have final authority to approve design modifications proposed by the Project Engineer.

### **3.2.3 Construction Quality Assurance Officer**

The CQAO will be responsible for overseeing the implementation of the CQAP (Appendix A). In overseeing implementation of the CQAP, the CQAO is responsible for monitoring construction performance for compliance with construction performance standards and design requirements during implementation of the removal action, and is responsible for overseeing the required inspection and verification activities. The CQAO will review documentation submitted by and work completed by the Contractor for adherence to performance standards and design requirements. The CQAO will be sufficiently familiar with the EPA-approved design documents and the construction operations to recognize deviations from those documents. The CQAO will also have the ability to manage and maintain the integrity of the data generated during implementation of the removal action.

The CQAO will be responsible for identifying those field conditions that may warrant deviation from the EPA-approved design documents. In such circumstances, the CQAO will coordinate with the EPA Project Coordinator to identify and agree upon any necessary deviations to meet the overall objectives of the design. Any agreed-upon deviations will be documented in the weekly progress reports to EPA.

The CQAO may use inspectors with the requisite expertise and experience to help perform the duties described above.

### **3.3 General Contractor**

The Contractor will be responsible for implementing the removal action by either performing tasks or contracting with subcontractors. The Contractor is responsible to ensure that the work complies with the requirements of the contract Construction Specifications and Drawings and provides all necessary quality control information.

As part of the removal action implementation, the Contractor will be responsible for developing and implementing the Construction Quality Control (CQC) Plan (see Section 4.10), including the required monitoring, sampling, testing, and reporting needed to implement the project in accordance with the Construction Specifications and Drawings. Independent of the Contractor's quality control program, Jorgensen Forge will implement this CQAP to verify that the removal action is implemented in accordance with the design. In accordance with implementing the removal action construction activities, the Contractor will oversee the development of an Environmental Protection Plan (EPP; see Section 4.11).

#### **3.3.1 Contractor Selection**

The Contractor will be selected through a competitive qualifications-based selection process. Each potential Contractor proposing on the project will be required to provide a Statement of Qualifications (SOQ) to the Owner with its proposal. This will allow the Owner to determine that the proposer is qualified, in terms of experience and capability, to perform the work. The contractor selection process is in progress and includes the following:

- |   |               |
|---|---------------|
| • Advertisement for Bids                          | June 4, 2013  |
| • Pre-Bid Site Walk                               | June 12, 2013 |
| • Receipt of Budgetary Estimates from contractors | June 14, 2013 |
| • Receipt and Opening of Formal Bid Package       | TBD           |
| • Receipt of Qualifications                       | TBD           |
| • Contract Awarded                                | TBD           |
| • Notice to Proceed                               | TBD           |

### **3.3.2 Contractor Personnel**

The Contractor will use key personnel to help with the tasks described above, including an on-site superintendent, CQC supervisor, and health and safety manager. The roles and responsibilities of these key personnel are described below.

#### **3.3.2.1 On Site Superintendent**

Direction of the work for the Contractor will be through an on-site Superintendent who will be responsible for executing the work in full compliance with the Construction Specifications and Drawings. The Superintendent will work to resolve work-related problems and day-to-day project management. The Superintendent may utilize one or more foremen to directly supervise the major construction activities. The Superintendent will exercise supervision over subcontractors, if subcontractors are utilized.

#### **3.3.2.2 Contractor Construction Quality Control Manager**

A CQC Manager will be provided by the Contractor as required in the Construction Specifications. The CQC Manager will develop and implement the CQC Plan through which the Contractor ensures compliance with the requirements of the Construction Specifications and Drawings. The CQC Plan will identify the duties and responsibilities assigned by the Contractor to the CQC Manager and additional inspectors, as needed to monitor that the removal action is implemented in accordance with the Construction Specifications and Drawings. The CQC Plan will state the chain of command for the CQC team, including identification of responsibilities for each member, to ensure that any actions related to the quality of work will be executed in an accurate and expeditious manner.

### **3.3.2.3 Contractor Health and Safety Manager**

The Contractor will employ a Health and Safety Manager to develop and implement a Construction Health and Safety Plan (CHASP). The CHASP will contain details of the chain of command and personnel responsibilities, as discussed in the Construction Specifications. The Health and Safety Manager will be required to have the appropriate current federal and state health and safety training necessary to perform the work.

### **3.3.2.4 Subcontractors**

The Contractor will either perform construction elements or contract with subcontractors to perform selected phases of the work for which they have special expertise. The subcontractors are responsible to the Contractor for the quality of their work, protection of the environment, CQC Plan, EPP, and CHASP. The subcontractors' principals will each designate a job foreman with responsibility to see that the work is conducted in accordance with the contract requirements and the Construction Specifications and Drawings.

### **3.3.3 Contractor Qualifications**

The Contractor will employ (as part of its permanent organization) senior, knowledgeable, and experienced personnel to oversee the project. The journeyman operators, surveyors, and other Contractor personnel performing key jobs must also have the demonstrated ability and skills to satisfactorily perform their respective assignments.

The CQC Manager, and the Contractor as a whole, must have documented qualifications and experience to perform independent checks on the Contractor's operations as necessary to determine compliance with the Construction Specifications and Drawings. These documented qualifications will be submitted to the Owner for approval prior to identifying a CQC Manager. Additionally, any subcontractors utilized in the work must have demonstrated to the satisfaction of the Owner that they are qualified and have satisfactorily performed the type of work for which they will be engaged. However, responsibility for the subcontractor performance rests with the Contractor. All Contractor and subcontractor personnel working on this project will be required to have current federal and state health and safety training, as applicable to the work they will be doing on this project.

## **4 CONTRACTOR WORK PLAN**

The following subsections present the selected contractor's planned methods to implement the removal action. Work will be conducted in accordance with the project plans and specifications.

### **4.1 Project Work Plan**

#### **4.1.1 Contractor Means and Methods**

To be determined by the selected contractor.

#### **4.1.2 Project BMPs**

Best management practices (BMPs) for dredging, excavation, demolition, stormwater management, spill prevention, and material placement that will be implemented as part of the removal action are specified in the project plans and specifications and the BODR (Anchor QEA 2013). Details on how the selected contractor will implement the required BMPs are provided in the Contractor Work Plan (Section 4).

#### **4.1.3 Temporary Facilities, Staging, and Access**

Job offices, parking, security fences, utilities, equipment & material storage, haul roads, access land/water, disposal facilities, subcontractors, changes

#### **4.1.4 Offsite Staging and Transloading**

To be determined by the selected contractor.

#### **4.1.5 Project Schedule**

To be determined by the selected contractor.

### **4.2 Demolition Plan**

To be determined by the selected contractor.

#### **4.2.1 Pre-Demo Activities**

To be determined by the selected contractor.

#### **4.2.2 Means and Methods**

To be determined by the selected contractor.

#### **4.2.3 Key Personnel and Supervision**

To be determined by the selected contractor.

#### **4.2.4 Schedule/Hours of Work**

To be determined by the selected contractor.

#### **4.2.5 Demolition Disposal and Salvage**

To be determined by the selected contractor.

### **4.3 Dredging/Excavation, Haul Barge Transport, and Dewatering Plan**

To be determined by the selected contractor.

#### **4.3.1 Project Description**

To be determined by the selected contractor.

#### **4.3.2 Work Sequence**

To be determined by the selected contractor.

#### **4.3.3 Means and Methods**

To be determined by the selected contractor.

#### **4.3.4 Positioning Methods and Procedures**

To be determined by the selected contractor.

#### **4.3.5 Quantity Tracking**

To be determined by the selected contractor.

#### **4.3.6 Transloading Material**

To be determined by the selected contractor.

#### **4.3.7 Schedule and Hours of Work**

To be determined by the selected contractor.

#### **4.3.8 Key Personnel and Supervision**

To be determined by the selected contractor.

#### **4.3.9 Water Quality Management**

To be determined by the selected contractor.

#### **4.3.10 Notifications**

To be determined by the selected contractor.

### **4.4 Transportation and Disposal Plan**

To be determined by the selected contractor.

#### **4.4.1 Generated Wastes**

To be determined by the selected contractor.

#### **4.4.2 Proposed Disposal and Recycling Facilities**

To be determined by the selected contractor.

## **4.5 Backfilling Plan**

To be determined by the selected contractor.

### **4.5.1 Material Sources, Products, and Suppliers**

To be determined by the selected contractor.

### **4.5.2 Means and Methods**

To be determined by the selected contractor.

### **4.5.3 Schedule and Hours of Work**

To be determined by the selected contractor.

### **4.5.4 Key Personnel and Supervision**

To be determined by the selected contractor.

## **4.6 Survey Plan**

To be determined by the selected contractor.

### **4.6.1 Schedule for Survey Work**

To be determined by the selected contractor.

### **4.6.2 Hydrographic Survey Equipment Notification**

To be determined by the selected contractor.

### **4.6.3 Equipment Calibration**

To be determined by the selected contractor.

#### **4.6.4 Recent Firm Experience**

To be determined by the selected contractor.

#### **4.6.5 Survey Staff**

To be determined by the selected contractor.

### **4.7 Vessel Management Plan**

To be determined by the selected contractor.

#### **4.7.1 Vessel Description**

To be determined by the selected contractor.

#### **4.7.2 In-water Haul Routes**

To be determined by the selected contractor.

#### **4.7.3 Notifications**

To be determined by the selected contractor.

#### **4.7.4 Means and Methods**

To be determined by the selected contractor.

#### **4.7.5 Schedule and Hours of Work**

To be determined by the selected contractor.

### **4.8 Traffic Control Plan**

To be determined by the selected contractor.

#### **4.8.1 Daily Truck Trips**

To be determined by the selected contractor.

#### **4.8.2 Pedestrian Traffic**

To be determined by the selected contractor.

#### **4.8.3 Haul Routes**

To be determined by the selected contractor.

#### **4.8.4 Site Security**

To be determined by the selected contractor.

### **4.9 Contractor Quality Control Plan**

To be determined by the selected contractor.

#### **4.9.1 Quality Control Organization**

To be determined by the selected contractor.

#### **4.9.2 Submittals and Material Testing**

To be determined by the selected contractor.

#### **4.9.3 Tracking and Reporting Construction Deficiencies**

To be determined by the selected contractor.

#### **4.9.4 Sampling and Analysis Plan**

To be determined by the selected contractor.

### **4.10 Temporary Facilities Controls and Environmental Pollution Control Plan**

To be determined by the selected contractor.

#### **4.10.1 Environmental Pollution Control Plan Overview**

To be determined by the selected contractor.

#### **4.10.2 Temporary Erosion and Sediment Control Plan**

To be determined by the selected contractor.

#### **4.10.3 Spill Prevention Control and Countermeasures Plan**

To be determined by the selected contractor.

#### **4.11 Water Management and Treatment Plan**

To be determined by the selected contractor.

#### **4.12 Site-specific Health and Safety Plan**

To be determined by the selected contractor.

#### **4.13 Construction Checklist**

To be determined by the selected contractor.

### **5 CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL**

The quality assurance program to be implemented during the removal action is described in Section 5 of the CQAP included as Appendix A. This section provides an overview of the CQA activities and how these activities will be coordinated with the contractor and the Contractor Quality Control Plan (Section 4.10)

#### **5.1 Submittal Management**

All final construction documentation will be stamped, as appropriate, by licensed professionals. If, during the course of construction, modification of the final stamped and approved design is required, modifications will be documented in writing and stamped by a licensed engineer. Undocumented modifications of the design or other deviations from the approved design will not be permitted. Construction surveys, including as-built surveys, will

be documented on drawings using the same datum, unit, and scale as design drawings. Record drawings will allow for a direct visual assessment of the quality and completeness of construction. Section 013300 of the project specifications identifies the required contractor submittal procedures.

The records described in this section will be maintained in the project files. Monitoring data will be provided electronically to EPA in the Removal Action Completion Report (RACR).

## **5.2 Weekly Progress Meetings**

Weekly progress meetings will be coordinated with EPA and its partner agencies including pre-notification of time and place of meetings. Conference call access will be provided as needed and requested by those agencies and meeting minutes will be prepared and made available to attendees. As part of ongoing coordination efforts with Boeing, the Owner will determine if and when Boeing representatives should be invited to attend the weekly meetings. Section 013100 of the project specifications identifies the required attendees and standard agenda for weekly meetings.

## **5.3 Inspection, Sampling, and Verification Activities**

### **5.3.1 Overview**

The Contractor will implement Contractor Quality Control Plan as described in Section 4.10. Additional quality assurance activities will be conducted by the Owner and Construction Management team and described below and in the CQAP (Appendix A).

### **5.3.2 Verification Survey**

The Contractor will conduct survey activities as detailed in the Survey Plan presented in Section 4.7 and in accordance with the Contract Documents. In addition to the survey activities conducted by the contractor, post-dredging bathymetric surveys will be performed by the Owner using a multi-beam fathometer. In areas where a survey vessel is unable to access, pole soundings or land-based conventional upland survey methods will be employed to supplement the data collection. Survey lines will be set at a 25-foot-grid spacing

perpendicular and parallel to the dredge cut where practical. Pole sounding measurements will be taken at a maximum interval of 10 feet along each transect or at a noted break in grade. A Real Time Kinematic Global Positioning System (RTK GPS) will be used to determine the horizontal position of each shallow water survey measurement taken. The Owner will also process the survey data obtained to verify the target elevations have been achieved.

#### **5.4 Documentation and Reporting**

During construction activities various documents will be generated as required by the Construction Specifications, CQAP (Appendix A), and Construction Quality Control Plan (Section 4.10). These documents and reporting requirements are presented below.

##### **5.4.1 Contractor's Daily Quality Control Report**

The Contractor will be required to provide a variety of documentation to the CQAO, including testing results of materials received, weigh tickets for shipments of materials removed, survey results, and documentation of pay items completed. The Contractor will also submit a Daily Quality Control Report to the CQAO, as specified in the CQAP (Appendix A). The Daily Quality Control Reports will be sent to EPA on a weekly basis as part of the Weekly Summary Report prepared by the CQAO in cooperation with the contractor.

##### **5.4.2 Construction Quality Assurance Officer's Daily Report**

The CQAO will maintain a daily field log to record observations, measurements, inspections completed, data received, communications with other members of the project team or EPA, any water quality exceedances, additional environmental controls that were implemented, problems encountered, and resolutions. The daily field log will be supported by submittals received from the Contractor, such as survey results and weigh tickets, chain of custody forms for water quality monitoring samples collected, laboratory data received, inspection reports, and written communication from members of the project team or EPA. Water quality results will also be separately recorded and reported as defined in the Water Quality

Monitoring Plan (WQMP; Appendix B). The CQAO will submit weekly progress reports to EPA as described in Section 6.2.3 of the CQAP (Appendix A).

### **5.4.3 Water Quality Monitoring Reports**

Daily, weekly, and final reporting of water quality monitoring results will be required for this project. Data will be collected and recorded in the field on the Water Quality Monitoring Form as described in the WQMP (Appendix B). At the end of each field day, the field forms will be scanned and e-mailed to the CQAO. Unless an exceedance of a water quality parameter occurs (which would trigger the contingency response actions described in Section 6 of the WQMP), daily field results will not be transmitted to EPA unless specifically requested.

The results from each week's water quality monitoring activities will be compiled into a summary table with a comparison to water quality compliance criteria. The weekly summaries will be provided to EPA within 2 business days of the work (i.e., generally by the close of business on Tuesday of the following week). The weekly summary tables and compliance evaluations will be performed by designated office support staff under the direction of the Water Quality Field Leader. All reporting will include both regularly scheduled monitoring and any additional monitoring results that may have been triggered by exceedances of water quality criteria.

After all construction has been completed, the water quality monitoring data for the entire construction project will be provided to the EPA in a *Water Quality Monitoring Report* (WQMR) as an appendix to the *Removal Action Completion Report*. The content of the WQMR is specified in the WQMP (Appendix B).

### **5.4.4 Hydrographic and Topographic Survey Reports**

The Contractor will conduct survey activities and submit daily survey progress reports as detailed in the Survey Plan presented in Section 4.7.

#### **5.4.5 Sediment Verification Sampling**

Post-dredge sediment samples and post shoreline excavation bank samples will be collected to confirm chemical concentrations following the removal action activities. Additionally, pre- and post-construction perimeter surface sediment samples will be collected to evaluate whether there are significant increases in concentrations of COCs in surface sediments adjacent to the RAB relative to pre-remediation concentrations as a result of construction activities. The sediment verification sampling requirements are included in the CQAP (Appendix A) and in the Field Sampling Plan (FSP; Appendix C). Detailed field and laboratory quality assurance and quality control criteria, including method specifications, detection limits, accuracy, and precision requirements are included in the Quality Assurance Project Plan (QAPP; Appendix D)

#### **5.4.6 Borrow Site Characterization Reports**

Prior to any on-site placement of import materials, the Contractor shall submit a Borrow Site Characterization Report to the CQAO. The characterization report will include identification of the source (including a map documenting the origin of the material), site inspection, and material sample and characterization (physical and chemical testing, as specified) to ensure that the import material will uniformly meet the chemical and physical specifications of its intended use.

### **5.5 Field Change Documentation**

### **5.6 Post-Construction Documentation**

Within 90 days of EPA confirmation that the removal action requirements have been fulfilled (excluding long-term post-construction monitoring requirements), the Owner will submit a Draft RACR. The Draft RACR will contain the following information:

- Introduction
  - Site location
  - Environmental setting
  - Relevant operational history

- Summary of previous investigations and actions
- Removal Action Background
  - Basis for the removal action (i.e., the AOC)
  - Context within overall LDW Superfund Site
  - RAOs
  - Summary of design basis
  - Summary of deviations from the design, if any
- Construction Activities
  - Description of dredging activities
  - Description of shoreline bank reconfiguration
  - Description of backfill and armor placement
  - Description of transport, offloading and offsite disposal
  - Description of construction monitoring activities
  - Description of completion and demobilization
- Chronology of Events
  - Description of the timing of construction activities, identifying milestones with reference to a tabular summary of a more detailed construction timeline
- Performance Standards and CQC
  - Description of performance objectives and verification activities performed to confirm the removal action was implemented in accordance with the Construction Specifications and Drawings
  - Description of actual construction performance relative to performance objectives, including a summary of the results of CQA measurements and analyses
  - Description of contingency actions implemented, if any were necessary
  - Description of EPA's oversight activities
  - Summary of z-layer sampling and perimeter monitoring results
  - (Note: quality assurance for water quality monitoring analytical data will be included in the Final Water Quality Monitoring Report)
- Final Inspection and Certifications

- Description of final inspections, including the scope of inspections and noting any deficiencies identified and corrective actions implemented
  - Summary of health and safety monitoring during the implementation of the removal action with notation of deviations or incidents, if applicable
  - Identification of any institutional or engineering controls that are implemented to maintain the integrity of the removal action, including identification of parties responsible for maintaining and enforcing controls
  - If applicable, summary of close out requirements for off-site offloading facility
- Operation and Maintenance Activities
  - Description of post-construction monitoring and maintenance requirements
  - Description of contingency measures that would be implemented if post-construction monitoring indicates such measures are warranted
- Summary of Project Costs
  - Identification of the actual final costs incurred to comply with the provisions of the AOC
  - Identification of costs previously estimated for implementation of the removal action and an update of the cost estimate for post-construction monitoring and maintenance costs
- Observations and Lessons Learned
  - Identification of problems encountered, if any, in implementing the removal action and corrective actions
  - Identification of successes in implementing the removal action
  - Analysis of lessons learned that may be applied to future activities
- Removal Action Contact Information
  - Identification of individuals (contact names, addresses, and phone numbers) for design and remediation contractors, EPA oversight contractors, and key personnel at the Owner, EPA, and other agencies

The RACR will also include copies of as-built drawings, summaries of waste disposal and analytical results, the Final Water Quality Monitoring Report, and the certification statement required by the AOC.

If applicable, the Owner will submit a Final RACR within 60 day of receipt of EPA comments on the Draft RACR.

## **6 PROJECT SCHEDULE**

To be determined following contractor selection

## **7 REFERENCES**

APPENDIX A  
TITLE

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